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AUTHOR Irwin, Cheryl; Phipps, Maurice
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ABSTRACT

For over 7 years, the Wilderness Education Association (WEA) and three universities have been using a systematic approach to leadership training in the outdoors: the experiential leadership education (ELE) method. The effectiveness of this approach was investigated by an aerospace expert interested in leadership training for isolated groups. A single-case time series design was used in which the researcher became a student trainee in a WEA program. The trainee kept a journal and completed the Expedition Leader Style Analysis (ELSA) before and after the 10-day course. A group dynamics questionnaire was completed by all students. The course--the WEA National Standard Program for professionals in the field--was expeditionary and used the ELE method to teach the "people skills" of outdoor leadership. ELE was found to offer theory-based information in an experiential manner, as well as using helpful tools for student feedback. ELE provided a structured program in which students learned new concepts of leadership and decision-making based on the situational leadership model, and applied the theories in a daily journal-keeping exercise. Use of the ELSA inventory gave students a chance to evaluate their own decision-making objectively and to identify their own dominant or preferred style. Implications of the training for leadership and safety issues in the aviation industry are discussed. (SV)

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THE GREAT OUTDOORS AND BEYOND: COMMON THREADS IN LEADERSHIP TRAINING ON LAND, IN THE AIR, AND IN SPACE

Cheryl Irwin
Maurice Phipps

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THE GREAT OUTDOORS AND BEYOND: COMMON THREADS IN LEADERSHIP TRAINING ON LAND, IN THE AIR, AND IN SPACE

Cheryl Irwin
NASA-Ames Research Center
Moffett Field, CA

Maurice Phipps
Assistant Professor
Western Carolina University

The purpose of this study was to investigate a systematic approach to learning leadership in the outdoors. A single-case design was used with an expert from a related field taking part in an expedition using the Experiential Leadership Education approach to learn the "people" skills of leadership.

KEY WORDS: *leadership styles, group dynamics, expedition, space analog, safety*

Background

The purpose of this study was to investigate a systematic approach to learning leadership in the outdoors, the Experiential Leadership Education (ELE) method (Phipps, 1986, 1988a). The Wilderness Education Association (WEA) and three universities (California Polytechnic State University, Washington State University, and Western Carolina University) have been using this method over the last seven years both in the field and in regular recreation leadership classes. Many inquiries have also been answered about ELE from throughout the USA, Canada, Great Britain, New Zealand, and France. The WEA's use has been varied, with some WEA courses using a modified version of the ELE and some using the complete format. Some later field courses have used an expedition-based leader style inventory, the Expedition Leader Style Analysis (ELSA) instead of business management instruments that require transference of business terminology to outdoor concepts in the thinking of participants. The ELSA was constructed by Phipps and Phipps (1991b) and tested by Ballard (1989) and Mann (1992). The details of these studies can be found in the *Expedition Leader Style Analysis Statistical Analysis* (Phipps et al., 1994).

The research question was "In what way is this systematic approach effective from the viewpoint of an expert from another related field?" The goal of the exploratory research was to find mutual information on leadership training for groups that are isolated for extended periods of time. The related field used was research being done at the Aerospace Human Factors Research Division at the NASA-Ames Research Center. McAvoy, Mitten, Steckart, and Stringer (1992) recommended in-depth case studies and observational techniques as part of future developments in group dynamics research. The research design for this study included a single case time series design with pre- and post-test measures of leader styles and separate measures on group dynamics, which allowed comparison of both the leader's views and the group's views for this expedition.

NASA has been conducting research on crew coordination and communication in aviation and space analog environments to provide insights into selection, training, and crew performance issues. Airline crews are used to study team performance and crew communication. Extreme or remote environments such as mountaineering expeditions and undersea habitats have been used as analogs for planetary exploration and long-duration space missions (Kanki, 1991). A researcher from NASA-Ames Research Center attended a WEA course to do the exploratory research on leadership training (referred to as the trainee in this study). The

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Cheryl Irwin is a researcher at the NASA-Ames Research Center, Moffat Field, California. Maurice Phipps is an assistant professor at Western Carolina University, Cullowhee, North Carolina. Please direct correspondence to Dr. Phipps at the Department of Health, Physical Education and Recreation, Western Carolina University, Cullowhee, NC. 28723. Phone: (704) 227-7645.

course was a WEA National Standard Program for professionals in the field. The ELE method was used to teach the people skills of outdoor leadership. The course, held in the Adirondacks, was expeditionary in nature and included canoeing and backpacking as modes of travel.

Method

The research used a single case design, with the visiting researcher going through the program as a student trainee. This entailed using the journal entries and the ELSA inventory as outlined in the ELE method to collect data to analyze leader decision-making over time in relation to theories presented through experiential learning exercises during the course. The ELSA was used as a pre-test for teaching Situational Leadership™ theory and as a post-test for comparison of changes in dominant and alternate leader styles. Group dynamics data were collected from all students using the Group Dynamics Questionnaire (Phipps, 1986), which allowed comparisons between the trainee's evaluation of the group dynamics and those of the rest of the group. All the data were tabulated using the computer program *A Systematic Approach to Learning Leadership* (Phipps & Webre, 1993). An explanation of the ELE method follows.

Experiential Leadership Education (ELE)[1]

Experiential Leadership Education provides a method of teaching and measuring aspects of the people skills of leadership in a systematic way. People skills include leadership styles and group dynamics, as opposed to the "technical" skills such as logistics planning, budgeting, marketing, etc. People skills, because of their amorphous nature, are often difficult to conceptualize. In using Experiential Leadership Education, the intent is to make conceptualization easier by means of experience rather than abstraction in using an Experiential Leadership Profile consisting of:

a. Scores from a test instrument showing dominant and supporting styles
b. Scores from a test instrument showing changes in style adaptability and effectiveness
c. Data gained from experience, i.e., actual decision making (recorded in a journal) using a theory of leadership such as Hersey and Blanchard's Situational Leadership™.
d. Perceptions of group process from a group dynamics questionnaire.

The combination of the leadership instrument scores (showing dominant style, effectiveness, etc.), actual decision making graphically represented and detailed in a journal, and the perceptions on the Group Dynamics Questionnaire allow a perception check for the leader. They enable the leader to visualize aspects of his/her leadership that are normally difficult to see. Using the ELE and the Experiential Leadership Profile as a teaching method combines the experiential and theoretical constructs of leadership using a systematic approach and allows follow-up analysis. The results can be visually tracked and statistically analyzed. Original testing of the ELE method was completed using time series analysis and group comparisons. Significant gains were made using the systematic approach (Phipps, 1986).

Results

ELSA scores, decision-making totals and group dynamics scores for the trainee are all shown in the profile in Figure 1.

Test Results on the ELSA

The trainee was comfortable using all four styles of Situational Leadership™ (telling 3, selling 3, participating 4, delegating 2), with a slight tendency to use participating more than the other styles. Over time, the distribution remained approximately the

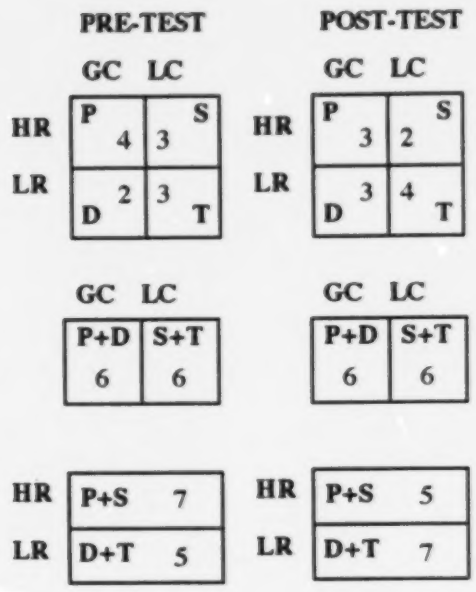
[1]Full details of the theory base supporting the ELE method can be found in Phipps (1988a, 1988b). It involves the use of Situational Leadership™ theory (Hersey & Blanchard, 1984) and a group dynamics teaching model (Phipps 1991) integrated with the above data gathering techniques. An important link regarding the Situational Leadership™ model and group dynamics is the integration of Jones' group development theory (1973), which corresponds to Situational Leadership™ and enables the leader and group to anticipate different stages of group development, matching this with the use of the most appropriate leader style (Phipps & Phipps, 1991a).

Style Range and Adaptability from the ELSA[2]

Dominant Style: *Participating*

Supporting style(s): *Selling* and *Telling*

	PRE-TEST	POST-TEST
Telling (T)	3	4
Selling (S)	3	2
Participating (P)	4	3
Delegating (D)	2	3
Leader-centered (LC)	6	6
Group-centered (GC)	6	6
High-relationship (HR)	7	5
Low-relationship (LR)	5	7



Decision-Making (totals prioritized throughout the course)

Style	Totals
Telling	10
Selling	8
Participating	12
Delegating	12
Leader-Centered	18
Group-Centered	22
High-Relationship	20
Low-Relationship	20

Figure 1. Experiential Leadership Profile

[2] The ELSA measures the Situational Leadership™ Styles after the selection of one choice from four options for each of 12 different situations. Each of the four options illustrates one of the four different styles: telling, selling, participating and delegating. The optimum score on the inventory is 3 in each quadrant. The numbers in each quadrant represent how many times that style was chosen. The quadrants can be combined to show leader-centered/group-centered decision-making and high-relationship/low-relationship decision-making. As there is a 'best' score for each situation, effective and ineffective use of styles can be pinpointed.

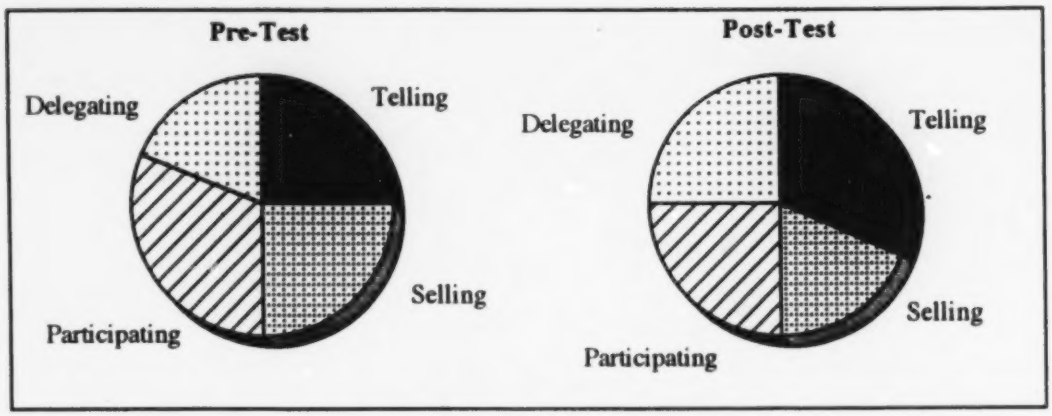


Figure 2. ELSA Pre- and Post-Test Style Changes

same (telling 4, selling 2, participating 3, delegating 3), except that telling became the more dominant style.

On the pre-test, the trainee's relationship orientation was fairly evenly split between high relationship and low relationship (high 7, low 5), and leader/group orientation was evenly split (leader 6, group 6). On the post test, these remained about the same (high relationship 5, low relationship 7, leader 6, group 6). Figure 1 illustrates the changes in Situational Leadership™ styles, group-centered/leader-centered decisions, and high/low relationship decisions. Figure 2 shows two of the changes in leader style adaptability.

The trainee's initial effectiveness rating was fairly high, 73%. Though the subject chose the most ineffective style on one item on both the pre-test and the post-test, the overall effectiveness rating increased on the post-test. This demonstrated a good sense of the maturity of the group and an understanding of which style might be effective in each situation. The Situational Leadership™ module of the course focused on certain aspects of group maturity and how they relate to specific leadership styles. Overall, the trainee learned how to define group maturity better (relating to willingness and ability) on both relationship and task dimensions and learned which specific leadership behaviors were most effective in the various stages of group development.

Results of the Decision Log

In the trainee's actual decisions prioritized during the course, all four decision styles were used nearly equally: telling 10, selling 8, participating 12, delegating 10. They were fairly evenly split between relationship and task: task 23, relationship 21. There was also a fairly even distribution between high and low relationship: high relationship 20, low relationship 20; and leader and group: leader 18, group 22. This showed consistent use of all the styles.

With regard to trends, Situational Leadership™ theory predicts that the number of both leader- and task- related decisions will be higher in the beginning and lower near the end of a course. High relationship related decisions should start low, peak during the middle of the course, and trail off near the end when the group is functioning interdependently. In the course being studied, 10 days is not a particularly long period to be able to track trends in decision-making styles. It was not surprising that the trends of decisions did not conform exactly to the trends expected from Situational Leadership™ theory over a full life cycle. The group under study was made up of outdoor professionals. Group maturity started very high, so the group did not follow the maturation process typical of newly formed student groups.

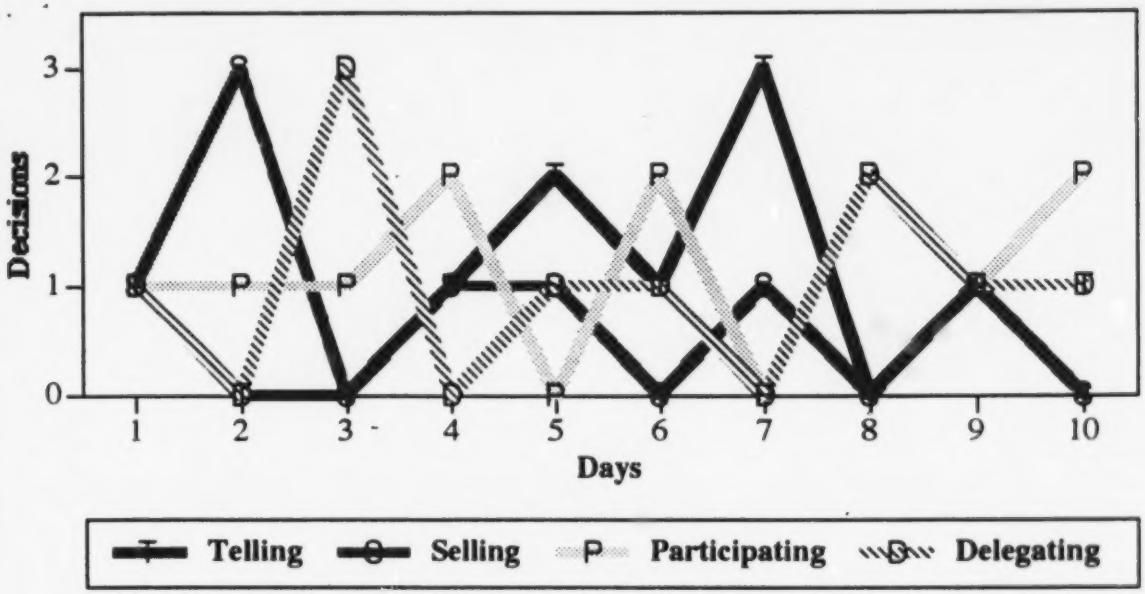


Figure 3. Leader Style Interaction Chart

Most decisions seemed to be based on the situation (task or schedule), as follower readiness was high. This is evident in the way the number of task-related decisions peaks on trail days and dips on the in-camp days. The relationship trends, though not as consistent, tended to peak on days when task-related decisions dipped. On trail days, the group seemed more task oriented—getting to and establishing the next camp—whereas on the in-camp days, many of the group exercises and scheduling decisions (meals, free time) were very relationship oriented. Figure 3 shows the leader style interactions and is an example of one of the charts used to show trends.

From the trainee's leader- and group-related decisions, however, it seems that the decisions made on trail days were group-focused and the decisions made on camp days were leader-focused. So even though the trail day was very task oriented in terms of getting from one camp to the next, the leader seemed to consider group well-being when making decisions. One camp day was very structured in an attempt to cover all the academic requirements, and less group input was sought. The high use of telling on Day 7 in Figure 4 is a reflection of this pattern, whereas on Day 3—another camp day where time was not an issue—the group was mature in the task and more delegating was appropriate. The "mood of the group" was taken in to account for both these decisions using very different leader styles.

Group Dynamics Questionnaire

The data from the Group Dynamics Questionnaire showed that the group dynamics were very positive overall. The highest rated aspects of the dynamics were "cohesiveness and participation," whereas the lowest-rated were "goals and objectives" and "group interaction and social control." The trainee's data also followed the group pattern, with "participation" being rated highest and "group interaction and social control" being rated second lowest. The largest difference found between the trainee's ratings and those of the rest of the group was in the rating of "leadership." The trainee gave a slightly lower assessment of the "leadership" aspects of group dynamics and a slightly more favorable assessment of the "participation" aspects than those of the group (see Table 1 in the profile). The group dynamics summary for the group can be seen in Figure 4.

Overall, the group as a whole assessed the group dynamics quite favorably. This may be due to the fact that this course was shorter than most WEA courses, so there was less opportunity for the group dynamics to break down before the Group Dynamics

TABLE 1

Group Dynamics Perceptions from the Group Dynamics Questionnaire

Group Dynamics Component	Raw Score	Trainee Leader's Score (%) (n=1)	Mean Score for Group (5) (n=10)
Task	21	44	43
Relationship	23	28	52
Leadership	4	25	61
Power	7	58	67
Goals and Objectives	9	45	36
Communication, Atmosphere and Climate	12	60	54
Participation	7	88	69
Group Interaction and Social Control	4	33	31
Role Structure	2	50	65
Cohesiveness	5	50	67

Notes:

a. These percentage points are high—the Likert scale used was +2, +1, 0, -1, -2. These scores were then converted to percentages for the various group dynamics components.

b. It is possible to score negative percentage points on the questionnaire if the group is dysfunctional.

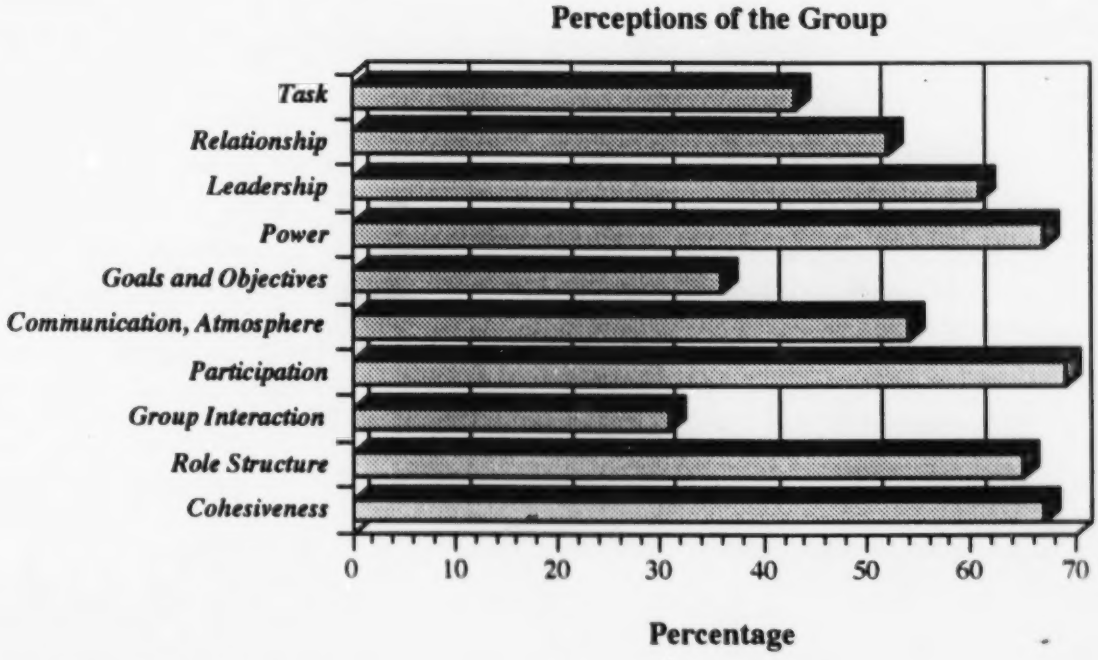


Figure 4. Group Dynamics Summary

Questionnaire was administered. Also, the group was made up of highly experienced outdoor leaders who were very cooperative and positive about the course as a learning opportunity. The responses and comments on the Group Dynamics Questionnaire seemed to reflect this.

Discussion of Results by the Trainee: Usefulness of the Systematic Approach

Leadership Styles: ELSA

The trainee's perception of this case study was that the systematic approach was useful in that it taught students a model of leadership and leader decision-making using the Situational Leadership™ model. Use of the ELSA inventory gave the students a chance to evaluate their own personal decision-making objectively and identify their own dominant or preferred style. Many training programs, management, team-building and outdoor programs, apply some means of evaluating personal management or leadership style through the use of a variety of management and personality indices. The importance of the exercise is to show that individuals differ in their personal styles and that certain styles are more appropriate in certain situations. One favorable aspect of the ELSA inventory is that it is designed specifically for use in outdoor education, so students are not forced to make translations from management terminology. All the situations and terminology are familiar to the student, so the information is more readily processed and applied in later situations.

Decision-Making: Journal

Use of the decision log allows the students to monitor their actual leadership decisions and appropriateness of decision-making styles over time. It is a focused means of applying the concepts learned in the Situational Leadership™ model to the decisions made during the course. It is also a valuable tool for debriefing and for monitoring changes in decision-making behavior.

Group Dynamics: Group Dynamics Questionnaire

This tool appears to be very useful for an instructor as a means of evaluating students' impressions of the group dynamics. It is useful to the individuals for comparing their own impressions with those of the group. It can be an effective means of providing feedback to individuals about their position relative to the rest of the group on various dimensions. When the questionnaire is re-administered during a course, it is possible to monitor changes in group dynamics over time.

Summary

Overall, the systematic approach to learning leadership (ELE) was found to offer theory-based information presented experientially, as well as helpful tools for implementing the program and providing feedback throughout the course. It provided instructors with a structured program for teaching leadership and offered students an opportunity to learn new concepts of leadership and decision-making and apply the theories in a daily journal-keeping exercise. The Group Dynamics Questionnaire enabled the instructor to evaluate group dynamics and changes in group dynamics over time. Both the journal and group dynamics data were useful tools for giving feedback and were helpful to have at the mid-course and final evaluations. Also, the computer program used to tabulate and graph the data obtained from the journal and questionnaires provided clear pictures that are quite useful for providing feedback. Though its use in the field would be impractical, it would be a very effective means of developing debriefing materials for the end of a course.

Implications: Relating Wilderness Leadership and Aviation Industry Issues

By implementing teaching methods such as ELE, the WEA and other organizations have successfully integrated people skills training as a fundamental part of formal wilderness education, but the industry-wide result of these efforts is still to be determined. What is the next step for wilderness leadership training? What can be learned from other domains about implementing, monitoring, and evaluating the success of these training programs? NASA's Ames Research Center began a program of research investigating human factors in aviation safety in the early 1970s. Since that

time there has been a tremendous amount of research into human factors issues, training, and safety in the aerospace industry. This research has also expanded to include studying the effects of remote or harsh (space analog) environments on crew performance. Two products of this research effort that directly parallel current trends in wilderness education are Crew Resource Management training (CRM) and the Aviation Safety Reporting System (ASRS).

Research has shown that 70% of airline accidents are caused by "pilot error." In an effort to increase safety, Cockpit/Crew Resource Management (CRM) training was developed in the early 1980s as a means of expanding existing flight crew training to include topics identified as potential sources of human error, such as leadership, communication, decision-making, workload delegation ,and situational awareness (Lauber, 1987). These sources of human error map closely to the people skills taught in the WEA curriculum: leadership, communication, decision-making, group dynamics, and safety/risk management. Resource Management training concepts have been adapted and modified and are now being applied in a variety of fields, including airline maintenance, surgical anesthesiology teams, and nuclear power plant control rooms.

The purpose of CRM training is to modify pilot behavior by first changing attitudes and values. Helmreich (1987) describes guidelines for maximizing the impact of training on attitudes. To be effective, the training must first be "credible, powerful and active" (p. 19). The trainee should believe that the training program is personally relevant and take an active role in the learning process. Second, the instructor has a critical role. Special attention must be given to the selection and training of effective facilitators. Third, training must be continuously reinforced. This is best done from within the system. The concepts expressed in training must be widely accepted and supported by management and the industry. Though the guidelines are intended for pilot training, they apply to a broad range of training programs. The WEA training discussed above follows most of these guidelines. The training is experiential, the students are usually highly involved, great care is taken in the selection and training of WEA instructors, and people skills concepts are supported throughout the course of the training program. Areas of future focus might include further reinforcement of training, the identification of new issues relevant to training, and development of metrics for assessing the success of training.

Training concepts must be reinforced after the initial training session, whether it be through subsequent training or through more widespread support of training (people skills training in particular) within the industry. Information for development of training materials can be drawn from real-world examples, but it is important to be able to make these examples available to a very large audience. In the aviation industry, much of this information comes from incident and accident data. The Aviation Safety Reporting System (ASRS) was started in the mid-70's as a means of collecting data on aviation incidents (aviation *accidents* are formally investigated by the National Transportation Safety Board). The ASRS offers an opportunity for pilots and other aviation personnel to report anonymously and confidentially regulation violations, near misses, or any out of the ordinary circumstances. The system also supports research on the data collected from the reports. The reports include detailed information regarding the aircraft, the weather, group dynamics and interpersonal climate, and a description of the incident and its causal factors.

It is estimated that for every aviation accident, there are over 3000 incidents, which provides a far richer database than if only accidents were used. Trends in incident data can be used as an alert to problem areas such as aircraft malfunctions or design flaws, and for topics of focus for research and continuing education. In addition to the benefits to training, the ASRS is able to disseminate safety information to a wide audience through newsletters and special bulletins. The WEA realizes the importance of tracking incidents or near misses in order to "identify situations and patterns that may potentially lead to accidents" (Bonney & Drury, 1992, p. 255). By formalizing the collection of incident data and modifying

existing wilderness accident reporting systems to include data on leadership, communication, decision-making, and group dynamics, it may be possible for outdoor educators to develop a large body of safety related data that would benefit both teaching and research.

Safety is a very important element of people skills training that is often underemphasized. The WEA mission is to "promote the professionalization of outdoor leadership and to thereby improve the safety and quality of outdoor trips and enhance the conservation of the wild outdoors" (Bonney & Drury, 1992, p. 177). In the outdoors, as in the aviation industry, actual incident and accident rates are too low to be used as an effective means of determining the impact of training on overall safety, but trends in the type of incidents reported or changes in the rate of incident reporting may reflect changes in attitude within the industry. With the wilderness safety information presently available, it is not yet possible to demonstrate a direct link between training and increased safety in the outdoors, however it may become a necessary objective. As competition for accreditation of outdoor programs increases, and liability issues are brought to the forefront, safety continues to play a crucial role in outdoor pursuits and should remain a driving force in the development, implementation, and evaluation of the human factors (people skills) of wilderness training.

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